

## **Energy Cost of Clean Water in the US – by Andrew Hunter**

### **Background**

Questions over the availability of water in parts of the US seem to be a daily event. The reasons may differ. In the southwest, California, for example, it is the question of quantity and shortages. While in the mid-west and Atlantic states there is opposition to changes in quality brought about by fracking.

### **Water and Energy**

Water and energy (in its different forms of sun and fire) is an ancient coupling and both are well-studied fields with many experts and much data. But it is unlikely that anyone has seriously considered the changes that may occur as we move to a different mix of energy fuels – gas, wind and solar perhaps, instead of coal, gas and oil.

We all know that water has myriad uses. It is essential for our individual physical survival and for the daily operation of the residences we inhabit. Industry and commerce would falter without it. The economy is growing more sophisticated and complex and so are the various controls on water. We require energy in its various forms to find, transfer and distribute water in the quantities we demand as a society.

There are many similarities between the fossil fuels and water – both exist in large pools that we deplete as we convert the material into something that we use. However, water can be extensively recycled unlike the fossil fuels which, once used, are CO<sub>2</sub> and are lost as “waste”.

### **Task**

Draw up some flow and storage balances for North America and determine the current state of knowledge about the energy needed in North America to get and distribute water to where it is needed the most.

Desalination plants are being built but are expensive. Put together a database of plants that recover water in a drinkable state and determine whether plans are afoot for this number to increase significantly.

This can be a highly regulated industry with a long history of arguments and claims. Find out the part that the cost of energy will play in this and find out what you believe will be the role of the newer mix of energy supplies.

